

UNDESCRIBED SPECIES OF THE GENUS *LIMNOPHILA* FROM EASTERN NORTH AMERICA
(Tipulidae, Diptera).

PART I.

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During the past few years, numerous species of undescribed Tipulidae from Eastern North America have come to hand and have been diagnosed. In the present paper, the writer discusses species of the genus *Limnophila* pertaining to the subgenera *Ephelia* Schiner and *Phylidorea* Bigot. The material upon which this paper is based is largely contained in material taken by the writer; in extensive series of crane-flies taken by Professor J. Speed Rogers in Michigan, Indiana, Tennessee and Florida; and in collections from Ontario made by Mr. C. Howard Curran. A few additional specimens considered at this time were included in the U. S. National Museum and U. S. Biological Survey Collections and in an extensive series of Adirondack Tipulidae sent to me by Mr. Howard Notman. I would express my sincere thanks to all of the above mentioned entomologists for co-operation in making known the crane-fly fauna of the country.

Limnophila (Ephelia) solstitialis n. sp.

Male.—Length about 5 mm.; wing, 6–6.2 mm.

Female.—Length about 6.5 mm.; wing, 7–7.5 mm.

Generally similar to *L. (E.) aprilina* O. S., differing especially in the average smaller size, different wing-pattern and the structure of the male hypopygium.

Praescutum with the intermediate pair of brown stripes having the two ends narrowly confluent; the short sublateral stripes tending to fuse with the intermediates at their anterior ends. Wings with a more abundant pattern, the clouds and seams along the cord, outer end of cell *1st M*₂ and at the ends of the longitudinal veins more broken; two, or sometimes three, brown spots in the outer end of cell *2nd A*, there being a small spot at the end of vein *2nd A*, with a larger, more basal area lying near the outer ends of cells *1st A* and *2nd A*, in transverse alignment with the large costal blotch at the origin of *Rs*. The supernumerary cross-vein lies a

¹ Contribution from the Department of Entomology, Massachusetts Agricultural College.

little distad of the level of the origin of *Rs* so the brown seam surrounding it is not in alignment with the two dark markings last described.

Male hypopygium with the outer dististyle long and slender, the apical portion still more narrowed and split at tip into two short, divergent points; outer margin at near four-fifths the length of the style with an acute or subacute tooth. Inner dististyle extensive.

Habitat: Eastern North America.

Holotype, ♂, Woodworths Lake, Fulton Co., New York, altitude 1,600 feet, July 7, 1916 (C. P. Alexander). *Allotopotype*, ♀. *Paratopotypes*, 5 ♂ ♀; Cincinnatus, Chenango Co., New York, July 20, 1916 (Alexander); Vandenburg's, Fulton Co., New York, June 9, 1911 (Alexander); Ridgewood, New Jersey, July 5, 1911, and August 16, 1912 (M. D. Leonard); Glen Echo, Maryland, July 4, 1921, July 9, 1922, August 6, 1922 (J. R. Malloch), in U. S. Biological Survey Collection; Glencarlyn, Virginia, June 4-11, 1911 (Fred. Knab), in the U. S. National Museum Collection; near Great Falls, Virginia, August 11, 1915 (W. L. McAtee); ♂ ♀, Allardt, Fentress Co., Tennessee, altitude 1,200-1,300 feet, June 28-July 2, 1924 (J. S. Rogers), Collector's Nos. 62, 69.

The specimens of *L. aprilina* mentioned by Osten Sacken (Mon. Dipt. N. Amer., Part 4: 224, 1869; last paragraph) probably refer to *solstitialis*. Likewise all records for *aprilina* in my "Crane-flies of New York, Part I: 809-810; 1919" pertain to *solstitialis* with the exception of the Tompkins Co. records, which refer to *aprilina*. In Johnson's "Diptera of New England," p. 29; 1925, all the records presumably refer to *solstitialis* with the single exception of the material taken at Whately Glen, Massachusetts, by the writer which again pertain to *aprilina*. It is probable that *aprilina* flies much earlier than *solstitialis* and most records for June to August pertain to this latter species. The records for *aprilina* and *solstitialis* are very confused. I am indebted to Dr. Nathan Banks of the Museum of Comparative Zoology for critical notes on the type-series of *aprilina*; from these notes it is very apparent that Osten Sacken had two species confused in his original series and that a third species from California was later added when the material from the "Western Diptera" was incorporated in the collection.

Limnophila (Ephelia) serotinella n. sp.

Male.—Length about 4.2-4.3 mm.; wing, 5-5.3 mm.

Female.—Length about 4.2 mm.; wing, 4.8 mm.

Very similar to *L. (E.) solstitialis* n. sp., differing conspicuously in the structure of the male hypopygium.

The size is smaller than all but the smallest individuals of *solstitialis*. The wing-pattern is somewhat heavier, there being in cases three dark markings across the outer end of the last anal cell. The male hypopygium has the outer dististyle small, the basal half dilated, thence suddenly narrowed to the acute simple apex; the usual lateral spinous lobe is also slender but blunt at the tip, placed far out at the apex of the style; the inner or cephalic margin of the style at its widest point is produced into an obtuse lobe. Inner dististyle short and broad.

Habitat: Tennessee.

Holotype, ♂, Allardt, Fentress Co., altitude 1,650 feet, September 3, 1924 (J. S. Rogers), No. 136. *Allotopotype*, ♀. *Paratopotypes*, ♂ ♀.

Type returned to Professor Rogers.

***Limnophila (Phylidorea) platyphallus* n. sp.**

General coloration chestnut-brown, the praescutum darker medially; head gray; fore and middle femora black, the basal fifth yellow; posterior femora with the distal third dark brown; wings whitish subhyaline, the costal region infuscated; abdomen brownish yellow, with a dark subterminal ring; male hypopygium with the aedeagus a very flattened and compressed black blade.

Male.—Length about 6.5 mm.; wing, 8–8.3 mm.

Rostrum and palpi dark brown. Antennae with the scapal segments dark brown, the first slightly pruinose, the second segment somewhat brownish yellow; flagellum obscure yellow, near midlength of the organ passing into brown. Head clear gray, on the posterior vertex extending backward as a triangular point, the sides of the vertex darker.

Pronotum dark brown, paler laterally. Mesonotum chestnut-brown, darker brown medially, subnitidous, the lateral margins of the sclerite more yellowish, the surface of the notum with a very sparse pollen; scutum dark chestnut-brown, the median area heavily pruinose; posterior callosities and the scutellum obscure yellow, the parascutella darker; postnotum reddish brown, pruinose. Pleura light brown, sparsely pruinose. Halteres yellow, the knobs dark brown. Legs with the coxae and trochanters testaceous yellow; fore and middle femora black, the basal fifth conspicuously light yellow; posterior femora obscure yellow, gradually darkening beyond the basal fourth, the distal third

strongly infuscated; tibiae brown, the tips broadly darkened; tarsi brownish black, the basitarsi vaguely paler on their proximal half. Wings whitish subhyaline, cells *C*, *Sc*₁, 2nd *R*₁, apex of *R*₂ and, in cases, the tip of cell *R*₃ strongly infuscated; stigma oval, slightly darker brown; cell *Sc* and prearcular region more yellowish; veins dark brown. Venation: *Rs* varying from arcuated to weakly angulated and short-spurred at origin; cell *R*₂ at wing-margin about one-third wider than cell 2nd *R*₁; cell 1st *M*₂ relatively small; *m-cu* placed at about two-thirds its length beyond the fork of *M*.

Abdominal tergites brownish yellow, narrowly darker laterally; segments eight and nine dark brown in male to form a conspicuous subterminal ring; hypopygium and sternites pale. Male hypopygium with the basistyles relatively short and stout. Outer dististyle pale, flattened, the apex truncated, only the apical outer angle a little produced into a small blackened point. Inner dististyle small, the basal half with a prominent setiferous shoulder on the outer margin, the apical half of the style suddenly narrowed into a long, slender point that is provided with delicate setulae. Gonapophyses elongate, the bifid apophyses with the outer arm a long blackened blade, the ventral arm very small, acicular. Aedeagus blackened, very flattened, in a position of rest appearing as a compressed blade; on slides flattened into a broad pod-shaped structure.

Habitat: Northeastern North America.

Holytype, ♂, Lake May, Berkshire Co., Massachusetts, in sphagnum bog, altitude 1,500 feet, July 1, 1925 (C. P. Alexander). *Paratypes*, 1 ♂, Orono, Maine, June 6, 1913 (Alexander); 1 ♂, Orillia, Ontario, June 10, 1925 (C. H. Curran); 1 ♂, Gogebic Co., Michigan, July 28, 1920 (J. S. Rogers), Collector's No. 21.

Type in the collection of the writer; paratypes in the collections of Professor Rogers and the Division of Entomology, Canada.

This interesting fly is most closely allied to *L. (P.) novae-angliae* Alex. which is likewise a northern species. Both have the curious flattened aedeagus but in all other respects are very different flies. *L. (P.) adjuncta* Dietz (Can. Ent., 52: 6-7; 1920) is doubtfully distinct from *L. (P.) terrae-novae* Alex. (Journ. N. Y. Ent. Soc., 24: 123; 1916). The venational and colorational differences indicated by Dr. Dietz are well within the limits of specific variation.

***Limnophila (Phylidorea) auripennis* n. sp.**

General coloration shiny ferruginous yellow; antennal flagellum yellow; femora and tibiae uniformly yellow; wings strongly tinged with yellow, the costal margin more saturated; wing-tip and the cord vaguely seamed with darker; abdomen (♂) without a dark subterminal ring; male hypopygium with the aedeagus slender, the apex gently curved.

Male.—Length about 9 mm.; wing, 9.5 mm.

Female.—Length, 11.5 mm.; wing, 11 mm.

Rostrum and palpi dark brown. Antennae with the basal segment dark brown, the succeeding segments yellow, the terminal segments a little more infuscated. Head gray, the sides of the vertex behind somewhat darker.

Pronotum and mesonotum shiny ferruginous, the lateral margins of the praescutum and the posterior sclerites of the notum more yellowish. In some cases, the praescutum is more darkened, especially antero-medially. Pleura ferruginous yellow, the pteropleurite and the sclerites behind it sparsely pruinose, the sternopleurite shiny ferruginous yellow. Halteres pale, the knobs more infuscated. Legs with the coxae and trochanters ferruginous yellow; femora and tibiae uniformly yellow, the tarsi passing into dark brown, the bases of the two proximal segments paler than their tips; in some cases, the legs are yellow with the exception of the terminal two tarsal segments only. Wings strongly tinged with yellow, the base and costal region clearer yellow; stigma oval, pale brown; very pale brown washes in the outer ends of cells R_2 and R_3 and as vague seams along the cord and outer end of cell *1st* M_2 ; veins yellow, in the darker areas passing into brownish yellow. Venation: *Rs* short, feebly angulated at origin; veins R_2 and R_3 gradually diverging; cell R_2 at wing-margin fully one-half wider than cell *2nd* R_1 ; cell *1st* M_2 small, elongate, hexagonally-rectangular; cell M_1 about equal to its petiole.

Abdominal tergites ferruginous yellow, in some females the intermediate segments more infuscated. Basal sternites clearer yellow, the outer segments a little darker. Male hypopygium with the outer dististyle pale, gently expanded beyond midlength into a rather broad blade, the outer apical angle with a conspicuous blackened chitinized hook. Inner dististyle relatively slender, the base at outer margin slightly dilated but glabrous, the slender apical portion with scattered setae, a few of which are elongate. Aedeagus relatively long and slender, the apex gently curved. Bifid gonapophyses appearing as broad diverging wings, the tips of both arms

acute, the cephalic spine nearly as long as the outer but more slender. Simple gonapophyses long and very slender, diverging.

Habitat: Northeastern North America.

Holotype, ♂, Antioch, Lake Co., Illinois, June 16, 1920 (C. P. Alexander). *Allotopotype*, ♀. *Paratopotype*, ♀; *paratypes*, 1 ♀, Mt. Kineo, Maine, August 17, 1913 (C. P. Alexander); 1 ♀, Keene Valley, Essex Co., New York, August 20, 1920 (H. Notman); 4 ♀♀, Ithaca, Tompkins Co., New York, May 29, 1916 (Alexander); 1 ♂, Brookview, Rensselaer Co., New York, June 12, 1923 (Alexander); 1 ♂, Orillia, Ontario, June 10, 1925 (C. H. Curran).

Type in the collection of the writer.

The male hypopygium of this species was figured as *L. (P.) adusta* O. S. in an earlier paper by the writer (*Psyche*, 18: 203, pl. 16, fig. 9; 1911).

Limnophila (Phylidorea) nigrogeniculata n. sp.

General coloration shiny ferruginous; head dark; antennae beyond the first segment yellow; femora yellow, the tips narrowly and abruptly brownish black; wings with the tips infuscated; *Rs* short; male hypopygium with the gonapophyses that subtend the aedeagus profoundly bifid.

Male.—Length about 5–5.5 mm.; wing, 6–6.5 mm.

Female.—Length about 6.5–8 mm.; wing, 6–8 mm.

Rostrum and palpi dark brown. Antennae with the first scapal segment dark brown, the remainder of the organ yellow, only the terminal segments a trifle infuscated. Head blackened, appearing greasy in the material available, and probably gray pruinose in fresh specimens.

Pronotum dark brown medially, the sides ferruginous yellow. Mesonotum shiny ferruginous, the lateral margins of the praescutum paling to yellow, the median area with a vague darker capillary vitta that is better indicated anteriorly; scutellum and median area of the postnotal mediotergite with a brown suffusion. Pleura pale reddish testaceous. Legs with the coxae reddish testaceous; trochanters yellow; femora yellow, the tips narrowly and abruptly brownish black, the amount subequal on all the legs; tibiae yellow, the tips very narrowly darkened; basitarsi brownish yellow, the tips darker, remaining segments of the tarsi passing into dark brown. Wings with a yellowish tinge, cells *C* and *Sc* more saturated; stigma oval, dark brown; wing-apex faintly but broadly and evenly infuscated; veins dark brown.

Venation: Sc relatively short, Sc_1 ending opposite or just before the fork of Rs , Sc_2 longer than Sc_1 ; Rs very short, angulated to short-spurred at origin; r faint, at tip of R_1 ; cell M_1 a little shorter than its petiole.

Abdominal tergites obscure yellow, the caudal margins of the segments narrowly but conspicuously infuscated; segment eight (δ) brownish black, more conspicuous ventrally; hypopygium yellow; sternites obscure yellow. Male hypopygium having the ninth tergite with a very conspicuous U-shaped median notch. Outer dististyle heavily chitinized throughout, gently dilated beyond midlength, the apex terminating in two small teeth, the outer one smaller. Inner dististyle shorter than the outer, narrowed and strongly curved to the slender tip. Gonapophyses long and slender, the pair subtending the aedeagus straight, each profoundly bifid, the arms slender; ventral apophyses appearing as slender diverging horns. Ovipositor with the sternal valves long and slender.

Habitat: Tennessee.

Holotype, δ , Allardt, Fentress Co., altitude 1,650 feet, July 15, 1924 (J. S. Rogers), No. 90. *Allotopotype*, φ , July 1, 1924; No. 67. *Paratopotypes*, several δ φ , July 1-22, 1924; Nos. 67, 90, 111.

Type returned to Professor Rogers.